National Institute of Environmental Health Sciences

US agricultural sector analysis on pesticide externalities - The impact of climate change and a Pigovian tax

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Abstract:

Residuals from agricultural pesticides threaten the environment and human health. Climate change alters these externalities because it affects pest pressure and pesticide application rates. This study examines damages from pesticide externalities in US agriculture under different climate projections and the effects of alternative regulations. We find divergent impacts of externality regulation and climate change on agricultural production in the US. A Pigovian tax on pesticide externalities generally increases crop production cost, but farm revenue improves because of increased commodity prices. Climate change generally decreases US farm revenue because production increases and prices fall. Results also show a heterogeneous effect of climate change on pest management intensities across major crops.

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Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Special Report on Emissions Scenarios (SRES), Other Climate Scenario

Special Report on Emissions Scenarios (SRES) Scenario: SRES A1

Other Climate Scenario: A1B

Exposure :

weather or climate related pathway by which climate change affects health

Food/Water Quality, Food/Water Security

Food/Water Quality: Chemical

Food/Water Security: Agricultural Productivity

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Global or Unspecified

Health Co-Benefit/Co–Harm (Adaption/Mitigation):

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact:

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation, Mitigation

Model/Methodology:

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Long-Term (>50 years)

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

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